Recommendations for Initial Care of Ocular and Adnexal Injuries at Level I and Level II Facilities

Adapted from *Ophthalmic Care of the Combat Casualty*

1. Check vision and get history of the injury.
2. Inspect eyes and adnexal structures using bent paper clips if necessary to elevate the upper eyelid to detect injuries without further injury to the globe (Fig. 1).

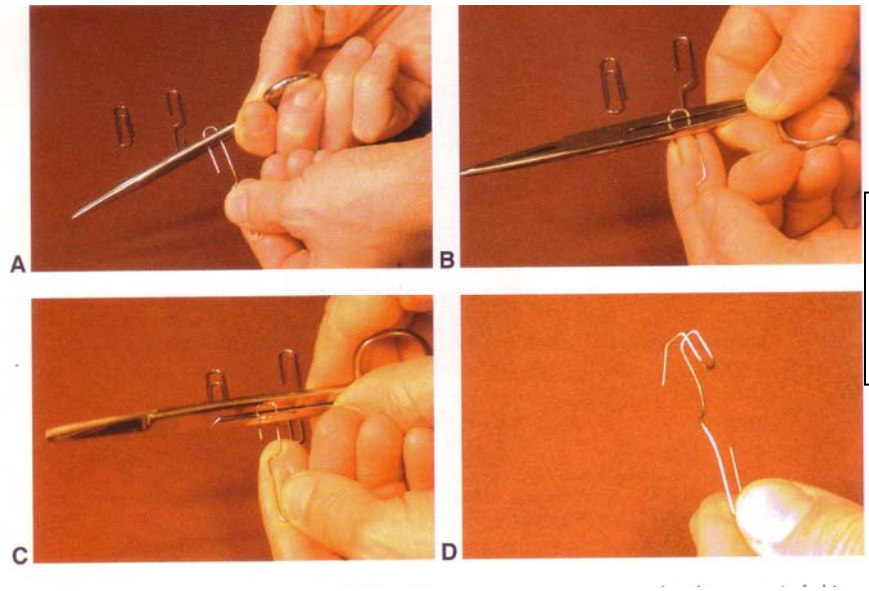

Figure 1. How to make an eyelid retractor out of a paperclip.

3. Remove nonimpaled foreign bodies on the conjunctiva or cornea using irrigation or moistened cotton-tipped applicator stick. Apply ophthalmic antibiotic ointment.
4. DO NOT remove impaled foreign bodies.
5. Treat corneal abrasions with ophthalmic antibiotic ointment. Avoid patching.
6. Identify ruptured or lacerated eyeball by prolapse of intraocular tissues (such as iris) through a wound (Fig. 2), hemorrhagic swelling of conjunctiva (Fig. 3), positive Seidel sign (Fig. 4) on the cornea, a very shallow or abnormally deep anterior chamber (compared to uninjured eye), a peaked pupil (Fig. 2), decreased extraocular motility, or severe vision loss. Do not apply pressure to the eye. Ask the patient not to strain or squeeze their eyelids. Tape a metal Fox shield over the eye or use the bottom cut out of a paper cup (Fig. 5) if a Fox shield is not available. **Do not apply a dressing to an open globe. Do not use ointment on an open globe. Avoid interventions that induce nausea/vomiting**. Evacuate to an Ophthalmologist.

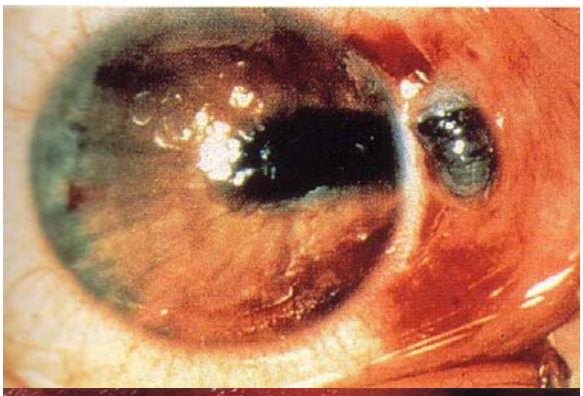

Figure 2: Uveal prolapse out a scleral wound.

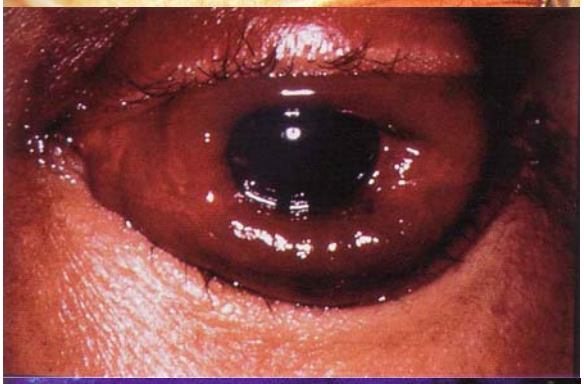

Figure 3: Hemorrhagic swelling of the conjunctiva or hemorrhagic chemosis is an ominous sign of a possible open globe.

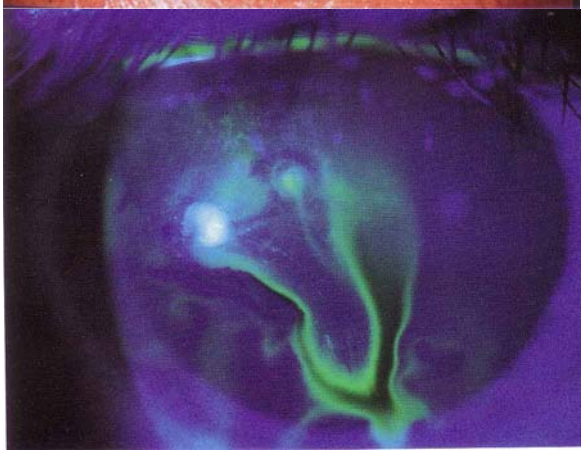

Figure 4: A moistened fluorescein strip applied to the cornea can reveal aqueous flowing from a corneal wound by allowing one to visualize the flow of fluid.

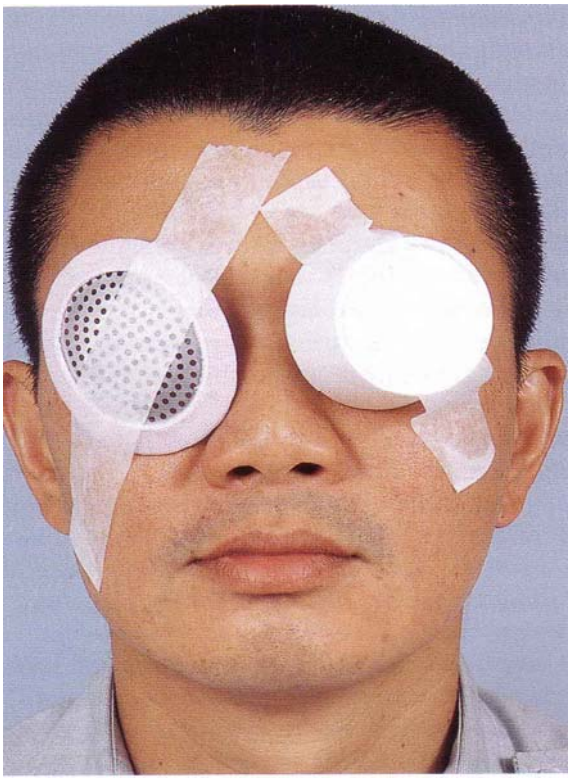

Figure 5: Protect an open globe with a metal shield or the bottom of a paper cup without an underlying dressing.

7. Anyone with possible intraocular foreign bodies – history of metal on metal strike, explosives, shrapnel, high velocity projectiles, etc. associated with eye injury should be treated as one with a penetrating eye injury and evacuated to a Level III Ophthalmologist.
8. Never give out topical anesthetics such as tetracaine or proparacaine for self medication. Avoid prescribing topical corticosteroids.
9. For chemical burns, irrigate for 60 minutes while removing any particles from the eye. You must flip the upper eyelid (Fig. 6) and inspect the inferior fornix to look for hidden foreign bodies.

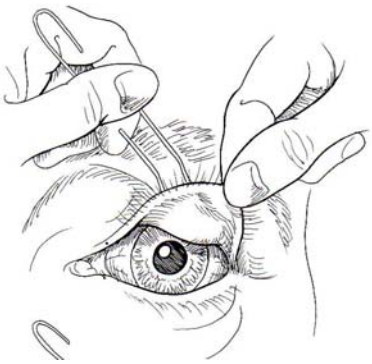

Figure 6: Flip the upper eyelid by firmly holding the eyelashes and lifting up while pressing down on the middle of the eyelid with a paperclip or the shaft of a cotton tipped applicator.

10. For severe injuries give tetanus prophylaxis and systemic antibiotics.
11. If you suspect orbital compartment syndrome from intraorbital bleeding – gross proptosis, tense tissues that are resistant to retropulsion (direct pressure), decreased vision, color vision loss, and Marcus Gunn pupil or afferent papillary defect (Fig. 7) – perform canthotomy and cantholysis (Fig. 8).

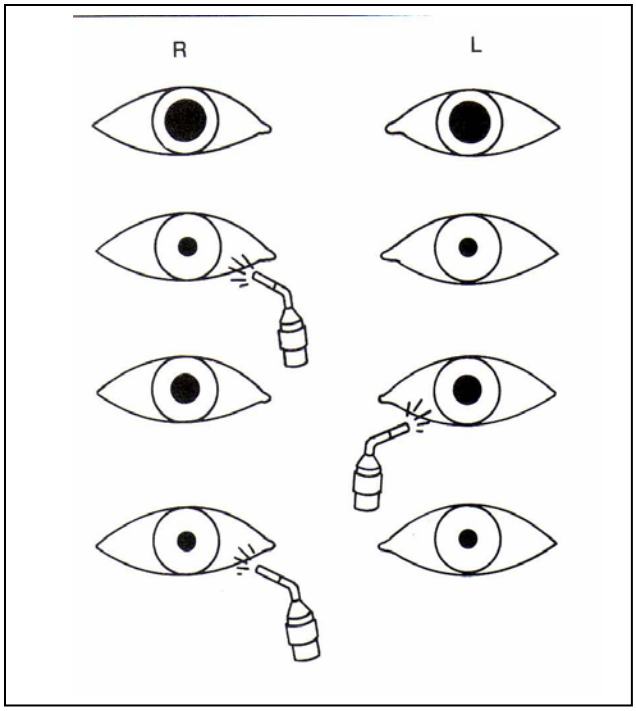

Figure 7: A Marcus Gunn pupil or afferent papillary defect is a sign of severe optic nerve dysfunction. The pupils are dilated in the dark. A bright light shone in an eye with a normal optic nerve will cause pupillary constriction of BOTH eyes. If then one swings the light quickly to the eye with optic nerve dysfunction both pupils will then dilate. Swinging the light back to the good eye cause constriction of both pupils again. This indicates that there is a left afferent papillary defect.

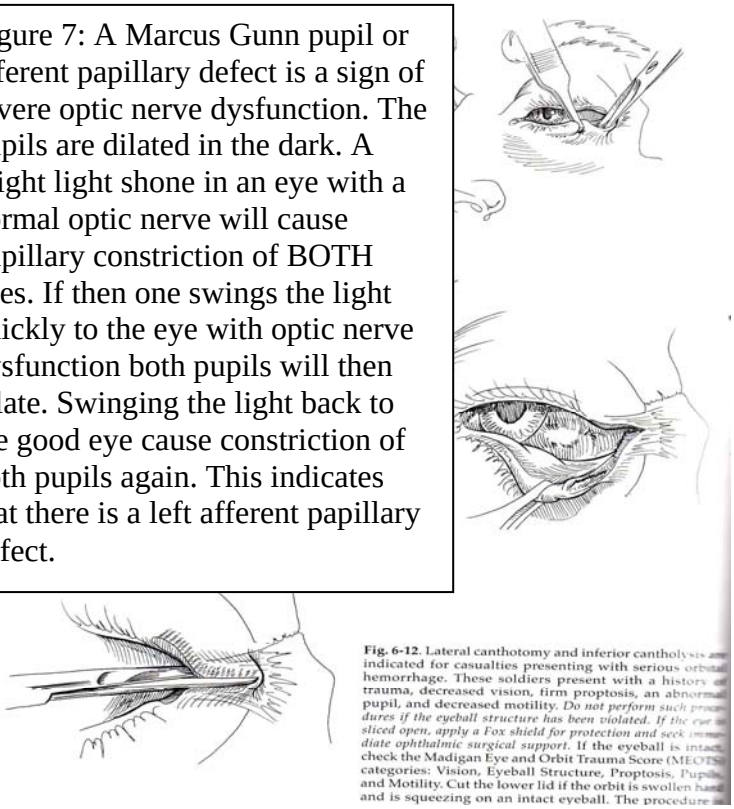

Fig. 6-12. Lateral canthotomy and inferior cantholysis are indicated for casualties presenting with serious orbital hemorrhage. These soldiers present with a history of trauma, decreased vision, firm proptosis, an abnormal pupil, and decreased motility. *Do not perform such procedures if the eyeball structure has been violated. If the eye is sliced open, apply a Fox shield for protection and seek immediate ophthalmic surgical support.* If the eyeball is intact, check the Madigan Eye and Orbit Trauma Score (MEOTS) categories: Vision, Eyeball Structure, Proptosis, Pupils, and Motility. Cut the lower lid if the orbit is swollen hard and is squeezing on an intact eyeball. The procedure

12. Patients with orbital floor fractures (blunt trauma with decreased extraocular motility especially in up and down gaze and numbness on cheek) should be told not to hold in sneezes and to not blow their nose. May give systemic antibiotics and send for evaluation by Ophthalmology and ENT or OMFS.
13. Only repair eyelid lacerations that: (1) do not involve the eyelid margin; (2) and are without fat prolapsing through the wound. Close these with 6-0 suture.
14. Eyelid lacerations that involve the margin (Fig. 9) or are deep with fat prolapse (Fig. 10) should be evacuated to a Level III Ophthalmologist with a moist dressing applied.

Figure 9: Laceration involving margin of eyelid that should be repaired by an Ophthalmologist.

Figure 10: Deep eyelid laceration that should be explored by an Ophthalmologist

15. If there is eyelid tissue that is amputated or partially amputated, DO NOT discard. Wrap in moist gauze and send with patient.
16. Evacuate any patient with severe visual acuity loss after an injury to a Level III Ophthalmologist as soon as possible.
17. If the cornea is exposed because of eyelid tissue avulsion or retraction of eyelids due to burns apply ophthalmic antibiotic ointment, cover the cornea and evacuate to a Level III Ophthalmologist.

References

1. Figure 1. Taken from the BSCS series published by the American Academy of Ophthalmology.
2. Figure 2. Taken from Ophthalmic Care of the Combat Casualty
3. Figure 3. Taken from Ophthalmic Care of the Combat Casualty
4. Figure 4. Taken from the BSCS series published by the American Academy of Ophthalmology
5. Figure 5. Taken from Ophthalmic Care of the Combat Casualty
6. Figure 6. Taken from Ophthalmic Care of the Combat Casualty
7. Figure 7. Taken from Neuro-Ophthalmology by Frank J. Bajandas.
8. Figure 8. Taken from Ophthalmic Care of the Combat Casualty
9. Figure 9. Taken from http://www.kellogg.umich.edu/theeyeshaveit/trauma/images/laceration-lid.jpg
10. Figure 10. Taken from http://www.opt.pacificu.edu/ce/catalog/10310-SD/Trauma%20Pictures/Eyelid%20Laceration.jpg

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